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A remarkable new Leucostomatine (Diptera: Tachinidae) from Madagascar

by

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SYNOPSIS

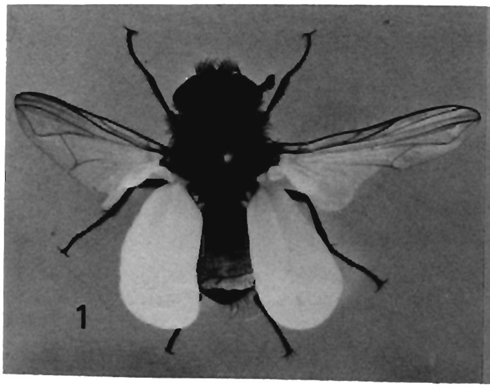
Calyptromyia stupenda sp. n. from Madagascar is described, *Calyptromyia* being recorded for the first time from the Afrotropical Region. The position of the new species within the tachinid tribe Leucostomatini is discussed and an opinion on the relationships of Leucostomatine genera to other Phasiinae is expressed.

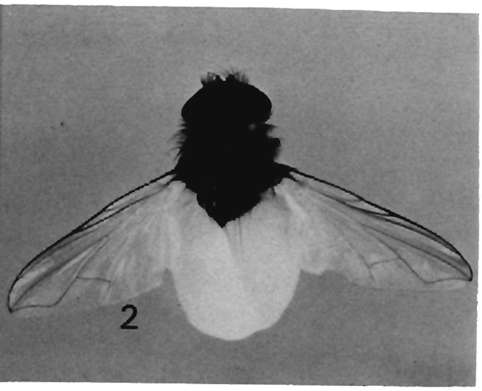
INTRODUCTION

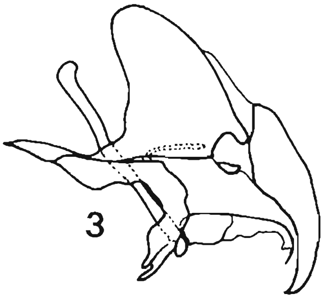
The phasiine tribe Leucostomatini is a small homogeneous group of tachinid flies, which, so far as is known, are parasites of the Hemiptera. They are characterised by a bare prosternum, two widely separated posterior intra-alar setae, a membranous post-coxal region, reclinate, divaricate or absent ocellar setae, often a setulose lunule, and in the female by the presence of a pair of forceps-like processes at the tip of the abdomen. These often bear large stout spines and are presumably used for gripping the host whilst an egg is injected with the piercing ovipositor. Males have the head dichoptic with the frons constricted medially, and in some species have the lower squamal lobe greatly enlarged. In the present paper a new species from Madagascar is described in which this enlargement has produced a fly of remarkable appearance (Figs 1–2). The squamae are without doubt the largest in the Diptera, and are actually longer than those of much larger flies in the Oestridae and Tachinidae with enlarged squamae. Proportionally they are gigantic, being almost two thirds of the body length. The lobes are opaque white and completely shield the abdomen when folded at rest (Fig. 2). The abdomen is totally covered with a dense silvery-grey dust which appears to shift according to the angle of light, as in some species of Milichiidae. The collector remembers capturing the specimens in clearings in a dense tropical forest but does not recall observing any unusual behaviour. The function of these remarkable structures, therefore, remains a mystery.

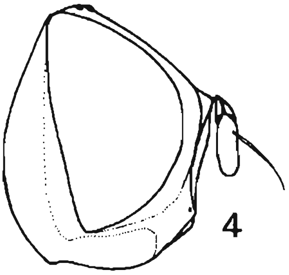
DISCUSSION

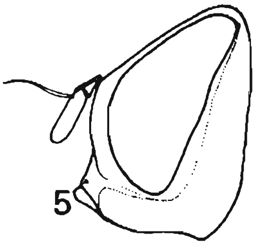
The tribe is treated here as consisting of two groups which are characterised by the presence or absence of vertical setae in the male. The use of this character as the basis of an important division of the tribe is especially convincing when the leucostomatines are compared with other phasiine tribes. In general male calyptrates with broad frons have well-developed vertical setae, but, unusually, almost all male Phasiini, even those with broad frons, are without them. This is also the











Figs 1-3. *Calyptromyia stupenda* sp. n. Dorsal view of 1, male holotype; 2, male paratype; 3, lateral view of hypopygium. Figs 4–5. Profile of head of 4, *Calyptromyia barbata* Villeneuve; 5, *Dionaea aurifrons* Meigen.

case with the leucostomatine genera *Calyptromyia* and *Leucostoma*. On the other hand, the Cylindromyiini have well-developed vertical setae in the male as do the leucostomatine genera *Dionaea* and *Labigastera*. It would appear that the presence or absence of these setae is an important taxonomic character in the Phasiinae and can be used as a character for the primary division of the Leucostomatini. The post-coxal bridge is undeveloped in the Leucostomatini, there being a membranous strip posterior to the hind coxae. This is also true of the majority of Phasiini, but in a few species it is rather weakly developed and often with a median seam. In the Cylindromyiini it is exceptionally well developed, being fully sclerotised and often with transverse striations. The degree of setulosity of the ventral surface of the costa may also represent an important taxonomic character, as the majority of the Phasiini have the costa setulose along the whole length of its ventral surface. A notable exception to this is *Alophora* and its close relatives. In the Cylindromyiini, as in the Leucostomatini, the costa is generally setulose to the junction with the subcosta, or less commonly to R_1. The degree of warping of the lower part of the face appears to have some significance as a character within the Leucostomatini as species with males with vertical setae have a rather prominent epistome due to the forward warping of the lower face (Fig. 5). Those without verticals have a flat face and therefore no prominent epistome (Fig. 4). Although these two groups are most easily recognised in the male sex, each one can be subdivided using characters of both sexes, as outlined below.

1. Epistome prominent (Fig. 5). Males with strong inner vertical setae and often with strong external vertical setae.
   - *(a)* Ventral surface of costa setulose to R_1. Lunule bare. Junction of R_1 and costa level with or a little beyond crossvein *r–m*. *Dionaea*, *Dionomelia*, *Labigastera* [Palaearctic]
   - *(b)* Ventral surface of costa setulose to subcosta. Lunule with weak or strong setulae. Junction of R_1 and costa level with or a little beyond crossvein *r–m*. *Clairvillia*, *Leucostoma gravipes* [Holarctic (Mainly Nearctic)]
2. Epistome not prominent (Fig. 4). Males without vertical setae.
   - *(a)* Ventral surface of costa setulose to subcosta. Lunule with strong setulae. Junction of R_1 and costa level with crossvein *r–m*. *Leucostoma* [All regions (some introduced)]
   - *(b)* Ventral surface of costa setulose to subcosta. Lunule bare or with a few weak hairs. Junction of R_1 and costa far beyond level of crossvein *r–m*. *Calyptromyia*, *Dionaea setifacies* [Oriental, Afrotropical, Palaearctic]

The species *Dionaea setifacies* Rondani agrees with all the characters outlined in 2b above and has the general appearance of a *Calyptromyia* but has a pair of fairly strong ocellar setae in the male. In all males of *Calyptromyia* I have examined the ocellars are absent. The species *setifacies* certainly does not belong in the genus *Dionaea* as defined above in group 1a.

The genus *Dionomelia* Kugler is represented by a single species, *hennigi* Kugler, and is unusual in having no apical crossvein and vein *M* not reaching the wing margin. It is however a leucostomatine and belongs in group 1a.

The genera *Oblitoneura* Mesnil and *Cinochira* Zetterstedt have also been assigned to the Leucostomatini but I believe that they should not be included in this tribe as they differ from it in a number of important characters. The head-shape in both sexes is totally unlike that of leucostomatines, the frons being exceptionally broad and not constricted in the male. The ocellar setae are proclinate, the apical scutellars strongly divergent and, most importantly, the post-coxal bridge is well developed. The male genitalia have the apical tergite rather elongate. The characters of the genitalia and post-coxal bridge are very reminiscent of the Cylindromyiini and it seems probable to me that these two genera should be assigned to this tribe. *Cinochira* is rather unusual in having a rhinophorid-like lower squamal lobe, which, as far as I am aware, occurs nowhere else in the Phasiinae. The female of *Cinochira* has forceps-like processes of the Leucostomatini, but I believe that these could have been derived independently from the more primitive 'Horseshoe-type' structure found in females of *Phania* and some other Cylindromyiini.

The new species described below has the general appearance of a *Calyptromyia* and agrees with most of the characters outlined in 2b above. However, the ventral surface of the costa is setulose along almost its whole length, as is the case in the majority of Phasiini. It also differs from other *Calyptromyia* species which I have examined in having only 1*ad* seta to the mid tibia, no presutural acrostichal setae, tergites without strong dorsal marginal setae and no appendix to vein *M*. The reduction of abdominal setae can be explained by the necessity to accommodate the greatly expanded squamae.

I am reluctant to describe a new genus for this species as it is so similar to *Calyptromyia* in general appearance, having a very similar head-shape and setulosity, enlarged squamae, and R_1 ending far beyond the level of crossvein *r–m*. It seems likely that any major revision of the Leucostomatini will involve an enlargement of generic concepts and will lead to synonymy. I have therefore refrained from describing a new genus but have included this striking new species in the genus *Calyptromyia*.

The genus *Calyptromyia* Villeneuve has previously been considered as being confined to the Oriental Region and is recorded here from the Afrotropical Region for the first time. The genus will run to Leucostomatini in van Emden (1945: 393) when 'ocellars absent' is included as an additional alternative in couplet 3 (4) of his key. The new species can be distinguished from all other Afrotropical Leucostomatini (see Crosskey, 1980: 828) by the absence of ocellar and vertical setae and the enormous squamae.

Calyptromyia stupenda sp. n. Figs 1–3

Description. Male only: *Head:* Dichoptic, frons equal to an eye width. Eyes bare. Ground colour black. Interfacial membrane orange-brown. Interfrontalia matt brown with fine black hairs along its margins. Parafrontalia shiny black on upper two thirds, lower third silvery-grey dusted, its whole length covered with fine black setulae. Parafacialia densely silvery-grey dusted and with fine black setulae. Frons constricted just in front of ocellar triangle to two-thirds of the width at the lunule. Profrons not prominent, parafacialia very narrow in profile. Lunule bare or with one or two fine hairs. Face silvery-grey dusted, flat, facial ridges hardly noticeable. Epistome only slightly protruding. Jowls at narrowest point equal to antennal width, brownish dusted and covered with black setulae. Occiput brown dusted with blackish-brown hairs. Antennal segments brown, arista long and bare. Vertical and ocellar setae absent. Frontal setae very fine, not easily distinguished from general setulosity. Vibrissae well above epistomal margin. Peristomal setae equal to half length of a vibrissa. Palpi and mentum brown.

Thorax: Ground colour black. Mesonotum rather shiny when viewed posteriorly except for humeri which are silvery-brown dusted. Otherwise at various angles of light appears matt, thinly brown dusted. Pleurae with a thin shifting brown dusting. Ground setulae dense, fine and black. *Ac* O+1, *dc* 2+3, *2h*, presutural setae present, *ia* 1+2, posterior ones widely separated, *pra* absent or very weak, 1*sa*, *pa* absent or very weak. Prosternum and propleuron bare. Propleural and prostigmatal seta weak. *Stpl* 1+1. Spiracles open with brown feathery fringes. Halteres brown. Scutellum with a pair of crossed apical, divergent subapical and basal setae. Post-scutellum very large, protruding beyond scutellum and brown dusted. Post-coxal bridge undeveloped.

Wings: Hyaline, slightly whitish posteriorly. Veins yellow. Epaulet and basicosta black. Ventral surface of costa haired to R_{2+3}. Basal node of R_{4+5} with a single seta above, bare below. Junction of R_1 and costa far beyond level of crossvein r–m. Bend of M evenly rounded. Cell R_5 open on margin. Squamal lobes opaque white, the lower lobe greatly enlarged, reaching beyond the tip of the abdomen (Fig. 2).

Legs: Brown, tibiae paler. Fore tibia with 1*p* seta. Mid tibia with 1*ad*, 2*p* and 1*v* seta. Hind tibia with 2*ad*, 2*pd*, and 3–4 *av* setae. Tarsal claws as long as the apical tarsus.

Abdomen: Ground colour dark brown with a dense silvery-grey dusting on all tergites. Ground setulae sparse, long and fine. T_{1+2} to T_4 with some slightly stronger lateral marginal setae. T_5 with a row of marginal setae. T_{6+7+8} with a few fine setulae basally. Sternites obscured.

Genitalia: Male hypopygium as in Fig. 3.

Measurements: Length of body 4,0–6,0 mm, wing 4,0–5,0 mm.

Material examined: MADAGASCAR: Holotype ♂, Tulear Province, Zombitsy Forest, 300 m, 22.iii.1968, K. M. G[uichard] & P. D[ale], in the British Museum (Natural History), London. Paratypes, 5 ♂, same data as holotype 4 ♂, BMNH; 1 ♂, Natal Museum, Pietermaritzburg (NM–2361).

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